

# AMATEURADIO

News of the Amateur Radio  
and Amateur Satellite Services

A Publication of the

American Radio Relay League, Inc.

Volume 2 Number 11

November 1981

## Ham Space Shot Heard 'Round World; Latest Amateur Satellite In Orbit

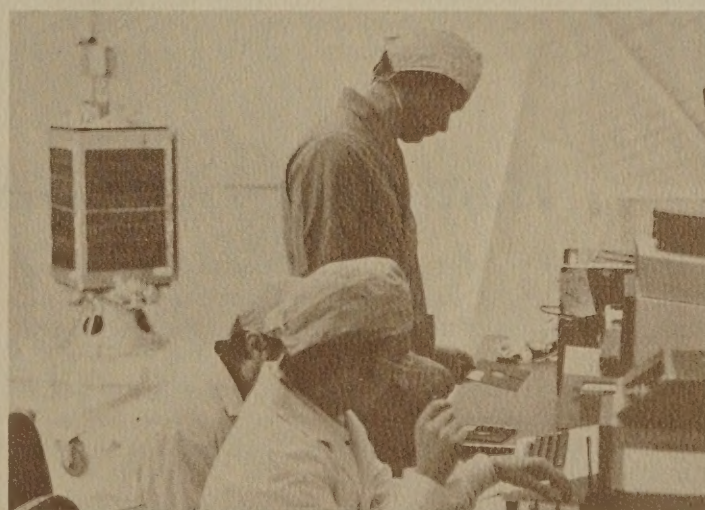
In the early morning hours of October 6, the Amateur Radio space program received new life when the latest in amateur satellites, UoSAT-OSCAR 9, was successfully launched into space from Vandenberg AFB, Calif.

The satellite, the ninth in a series since 1961 and the first built by radio amateurs in Great Britain, was aboard the NASA rocket that carried the Mesosphere Explorer mission into space.

The culmination of an estimated 20-man years of labor, OSCAR 9 was designed and built by radio amateurs at the University of Surrey, England. Many of the components that went into the spacecraft, however, were donated by various sources worldwide, making it truly an international effort.

One hour after its 4:27 a.m. liftoff from Vandenberg, OSCAR 9 separated from the Delta launch vehicle and began its first orbit of Earth. Moments later, the satellite's onboard computer was activated, and amateurs the world over listened as the spacecraft came to life.

*(Continued next page)*



Amateurs at Vandenberg AFB, Calif., run a final computer check on UoSAT-OSCAR 9, pictured in background, prior to its October 6 flight into space aboard a NASA launch vehicle. The satellite, the ninth in a series since 1961, will be used by amateurs to conduct various experiments.

photo by Bernard Glassmeyer



Unlike previous OSCAR spacecraft, which were designed primarily for long-range communication between ham radio operators, OSCAR 9 does not have two-way communications capability. Instead, the satellite will be used to conduct a variety of experiments.

While in orbit, about 300 miles above the earth, the satellite will be used by scientists to study the various ways radio signals travel in the earth's ionosphere and the suitability of different frequencies for use in future satellites.

Scientists in Surrey will also conduct two experiments never before carried on by radio amateurs. One involves a camera, which is mounted on the satellite, that will send digital images back to earth. These images, while providing weather information, will also be used to augment classroom science programs.

The other amateur first is a speech synthesizer. The system, which has a vocabulary of 120 words, will enable scientists to relay data worldwide through the satellite in "English."

Because of its polar orbit, which means the earth revolves under the satellite as it moves from pole to pole, total coverage of the earth will be achieved. Ham operators in every part of the world will have access to the satellite, to monitor its progress, to receive any information sent by it.

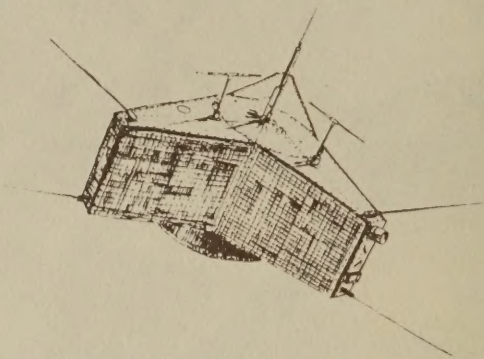
Aside from it being a valuable source of information to scientists, OSCAR 9 can also be used to send information to ham operators, says Bernard Glassmeyer, satellite coordinator for the American Radio Relay League, the organization for radio amateurs in the U.S. and Canada.

"OSCAR 9 will be like an orbiting bulletin board," says Glassmeyer, who has been involved in the amateur space program for the past four years. "Scientists can feed information into their computers and play it back through the satellite's beacons. In less than 24 hours, amateurs everywhere who are tuned into the satellite could get the information."

All of this, and more, will come in due time. First, says Glassmeyer, the spacecraft must undergo extensive engineering and evaluation testing. In the months to come, OSCAR 9's many systems will be turned on and

## AMATEUR SATELLITE PROGRAM At A Glance

Satellite	Life
OSCAR 1	12 Dec 1961 - 31 Jan 1962
OSCAR 2	2 Jun 1962 - 20 Jun 1962
OSCAR 3	9 Mar 1965 - 24 Mar 1965
OSCAR 4	21 Dec 1965 - 16 Mar 1966



OSCAR 5	23 Jan 1970 - 15 Feb 1970
OSCAR 6	15 Oct 1972 - 21 Jun 1977
OSCAR 7	15 Nov 1974 - still active
OSCAR 8	5 Mar 1978 - still active
OSCAR 9	6 Oct 1981 - still active

tested, and corrections made, before any experiments are scheduled.

In the meantime, amateurs worldwide keep their radios tuned into OSCAR 9, watching the newest addition to the amateur satellite family for which the ham radio community has high hopes.

## Ham May Hear First Word From Space

STANFORD — If there are any broadcasts from outer space to be heard, ham radio operators are the ones most likely to hear them, says a Stanford radio astronomer.

According to Ronald N. Bracewell, who constructed a large and complex radio telescope at the university, receiving signals from space is simply a matter of being in the right place at the right time.

"An amateur will be the first, because there are thousands of ham operators listening daily on the frequencies that are most likely to be used by an intelligent race out in the cosmos.

"The lonely scientist who is listening for signals from space is heavily outnumbered," the Stanford astronomer said.

According to the latest figures, there are more than one million Amateur Radio operators worldwide, representing virtually every nation, who have the capability to receive the signals, should they exist.

"If extraterrestrial signals are ever received," Bracewell said, "my hunch is that they are likely to be picked up by accident."

WANT TO KNOW MORE ABOUT THE AMATEUR RADIO SERVICE? Contact Perry Williams, ARRL's Washington Area Coordinator, and arrange for a personal visit by calling (202) 296-9107.



# Kansas Ham Keeps Contacts Close To Home

When flood waters in Great Bend, Kansas, cut that city off from most of the world last June, W.D. Bemmels of nearby Ottawa and his fellow Amateur Radio operators were able to get through and help the stranded residents.

Bemmels, known to his friends as "Doc," is section emergency coordinator for Kansas with the state Amateur Radio Emergency Service. As such, he was guiding other amateurs in transmitting official and emergency information in and out of the flooded area.

Most of the conventional means of communications in Great Bend were knocked out by power failures, Bemmels said, but he and the other amateur operators were able to get through using their portable ham radio gear.

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*"We supplement, we don't try to replace."*

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For a time, the amateur network was the only means of communication in and out of Great Bend for the National Guard and the Red Cross. After the National Guard got its own communications in order, the amateurs turned to making health and welfare calls, or putting worried friends and relatives in contact with people trapped in the flooded city.

Bemmels himself was on the air from when word of the emergency first came in, directing calls and keeping the bands open for emergency traffic.

"We work with the state emergency preparedness office within our capabilities," Bemmels said. "We supplement, we don't try to replace."

Amateur Radio operators may not be paid for their radio work, but they are trained. Each one must pass FCC tests for licensing and observe rules while on the air.

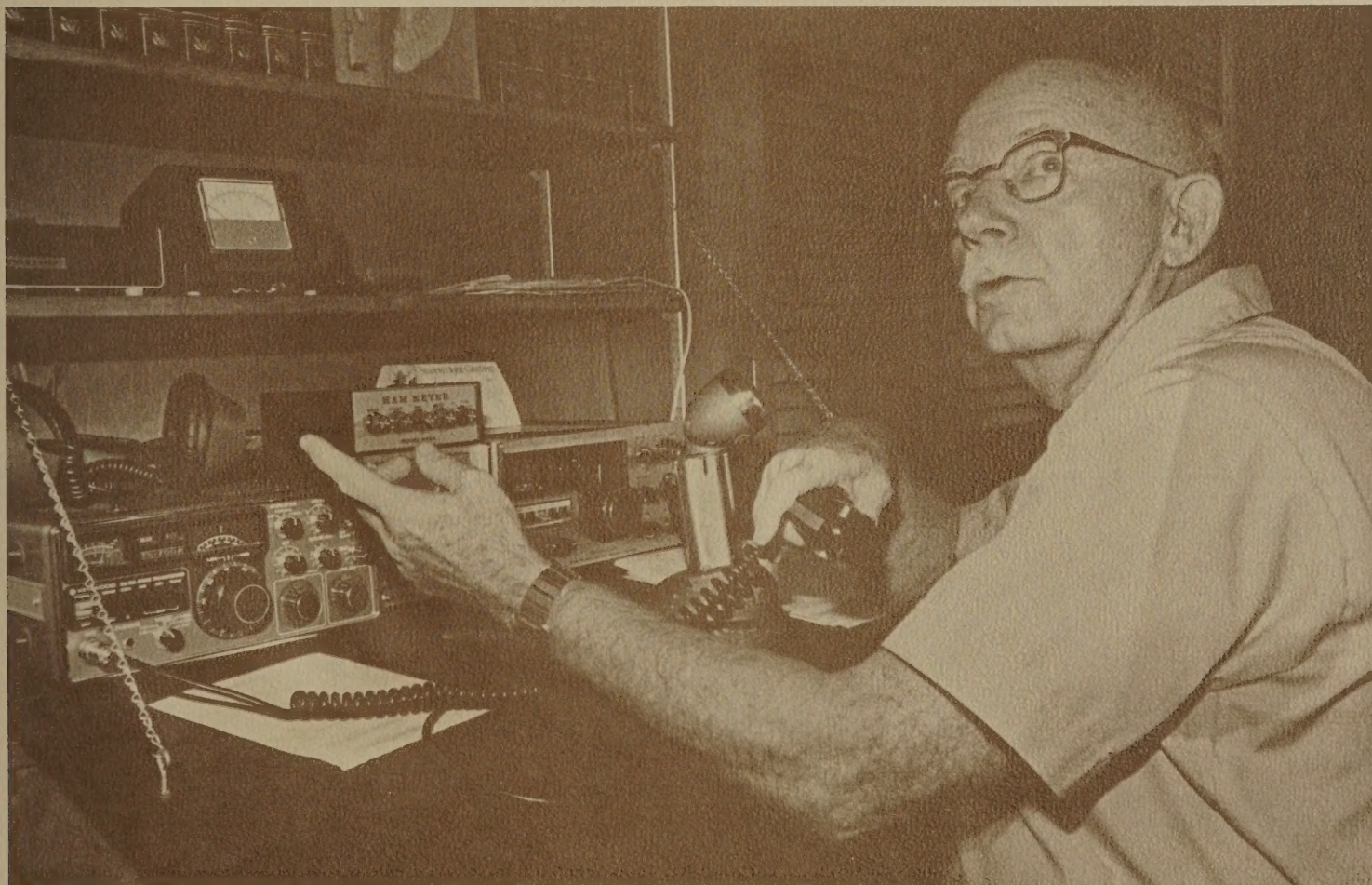
"We realize that there are a limited number of bands for radio communication, and we feel we pay for using ours by providing this type of emergency service," Bemmels said.

Bemmels, a retired professor of physics and mathematics, has also used his radio to help foreign students contact their homeland, notably students from Nicaragua during the earthquake there some years ago.

Bemmels said that, unlike some other ham operators, he is not excited about seeing how far he can transmit, though he does carry on regular conversations with other amateurs in Spain, Japan, Russia and Bolivia.

"Some operators go on what are called "DXpeditions," which is radio shorthand for distance, just to see how far they can reach with their radios, he said.

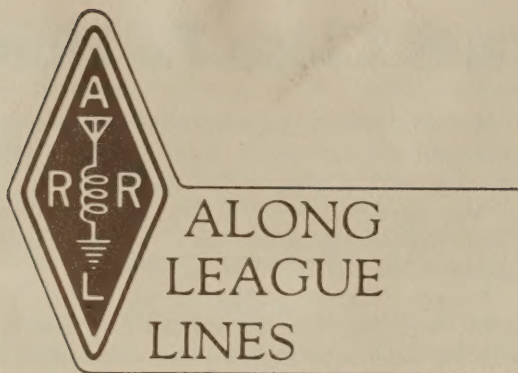
For Bemmels, at least for the time being, operating close to home has had all the excitement he needs.



Ham operator W.D. "Doc" Bemmels, emergency coordinator for the Amateur Radio Emergency Service in Kansas, directs the network's activities from his home in Ottawa.

photo by Dave Kaup





*Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.*

The above is one of the prime tenets of Amateur Radio, and it is in this vein that amateurs next month will celebrate the twentieth anniversary of one of their more illustrious achievements: satellite communications.

It was not long after the world entered the space age with Sputnik in 1957 that the amateurs' own space program was launched. Beginning with OSCAR 1 (Orbiting Satellite Carrying Amateur Radio) in 1961, amateurs have come a long way in developing advanced technical and operating skills within the sphere of satellite technology. Satellites are the way of the future for ham radio; amateurs have liberated themselves from the uncertainties and dependence of radio wave propagation. What this means is that the public will be better served by the

Amateur Radio Service in time of communications emergency — reliability, performance and service are the products of amateur satellites.

In the past 20 years, nine amateur satellites have graced the skies, bouncing the signals of amateur radio stations around the world. The latest experiment, UoSAT-OSCAR 9, sponsored by the University of Surrey, England, was propelled into orbit just weeks ago (see page 1). As with the previous eight amateur spacecraft, OSCAR 9 was the product of an international team effort, with amateur experts in the field of satellite hardware and software representing the global fraternity of hams working together on this project.

The ARRL and other amateur organizations continue to support the work of these international satellite teams. The ARRL Foundation, which administers many worthy scholarships, has also contributed to the amateur space program. Recently, the Foundation awarded \$55,000 to AMSAT, the Radio Amateur Satellite Corporation, as it prepares another satellite with greater performance capabilities for launch late next year.

In a speech earlier this year to kick off a major fund drive, Foundation President Robert York Chapman echoed his group's support of hams' efforts in space: "We are convinced that experimentation and progress within the Amateur Satellite Service unquestionably merits the attention of the entire amateur community."

We would only add that the work, research and development of the amateur community merits the attention of the entire world.



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Newington, Connecticut 06111

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NON-PROFIT ORGANIZATION  
U.S. POSTAGE  
PAID  
Hartford, Conn.  
Permit 2929

AMATEURADIO is published monthly  
by the Public Information Office of the  
American Radio Relay League,  
225 Main Street,  
Newington, Connecticut 06111;  
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